Video Conference Minutes
07/08/2003

Attendance:

ORNL: J. Galambos, S. Henderson, G. Dodson, S. Danilov, S. Aleksandrov, W. Klotz, Y. Sato, A. Shishlo, E. Tanke, M. Doleans, T. Pelaia, P. Chu, M. Plum, S. Cousineau

BNL: A. Fedotov, Y.Y. Lee. J. Wei, D. Raparia,

LBNL: J. Staples

JLab: J. Delayen

Agenda:

1) S. Kim presented a thermal stress analysis for copper for low energy (2.5 – 7.5 MeV) beams. The purpose was to establish maximum time to failure for a given beam intensity and size. Importantly, thermal diffusion effects are included. For small beam sizes (normal incidence) results are roughly similar to previous simple estimates. For larger beam sizes, thermal diffusion effects become important, and results are less conservative , esp. for the low energy range (2.5 MeV). This may lead to a relaxation of the maximum beam loss criteria for non normal incidence beam loss scenarios.

2) S. Henderson delivered J. Holmes' presentation on the effect of running the beam in the ring without the energy corrector and/or the energy spreader. Two different scenarios were explored for simulating beam injection into the ring in the absence of the energy corrector. Removal of the energy spreader was simulated by setting the waveform amplitude to zero. Substantial beam emittance growth and beam losses were seen in one of the cases where the spreader and corrector were both removed, and also in the case where the spreader was removed but the corrector left in place. However, emittance growth and losses were seen only after approximately 700 turns for the 1.44MW baseline beam power. Therefore, it was concluded that no substantial effects would be seen from the absence of the corrector and energy spreader for the 1 MW commissioning beam.

3) A. Fedotov gave a presentation on the "banana-shape-effect" (induced dipole oscillation) due to the offset of the extraction magnet from the closed orbit. Simulations showed that for the 2 MW beam, the induced dipole oscillation is on the order of a few millimeters. Additionally, with the current extraction kicker impedance, fractional losses for the 2 MW beam are approximately 0.3% at 230pi mm-mrad (x emittance + y emittance), and for the 1.44MW beam, fractional losses are approximately 0.2% at 220 pi mm-mrad. There should be no significant effect from the extraction kicker impedance for the 1 MW commissioning beam.

4) W. Klotz gave a demonstration of an application which utilizes the on-line model. The application performs dynamic lattice generation from either the xml database default values, or from synchronized machine values. Probe tools can be used to track single particle or the beam envelope within the generated lattice, and output of the probes can be seen in table or plot formats.